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Meeting of the Aristotelian Society at 21, Bedford Square, London, W.C.1, on Monday, 5th June 1967 at 7.30 p.m.

XIV—THE RELATION BETWEEN 'UNDERSTANDING' AND 'REASON' IN THE ARCHITECTONIC OF KANT'S PHILOSOPHY[1]

By GERD BUCHDAHL

I

A prime task which Kant undertook in his writings was an analysis of the foundations of science, compatible with a rationale for such theological locutions as God being the author of the world. Kant's 'laying of the foundations of natural science' is more complex than frequently realised, having the following components: (1) Proofs of certain general principles, like permanence of substance, of causality, and of dynamical interaction; (2) lawlikeness and systemicity of nature; (3) applicability of mathematics to physics; (4) 'intelligibility' of the basic concepts of Newtonian dynamics, such as velocity, inertia, elastic and gravitational forces, action-and-reaction. With the last two, discussed systematically in M, I am not here concerned. I only note them as a reminder not to construe Kant's philosophy of science merely in the light of (1) and (2), let alone (1), which presents too limited a picture, especially if we focus on causation in its transcendental context. This focus on causation (*via* the 'Second Analogy') has obscured for many the existence in Kant of *two* components, belonging to groups (1) and (2), in his argument whose aim is to secure the 'possibility' of natural

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[1] References are to the following works by Kant:
The Critique of Pure Reason, trsl. Norman Kemp Smith, Macmillan, London, 1953. Referred to as K.

Prolegomena to any Future Metaphysics, trsl. Peter G. Lucas, Manchester University Press, 1953. Referred to as P.

Critique of Judgment, trsl. J. H. Bernard, Hafner, New York, 1951. Referred to as J.

First Introduction to the Critique of Judgment, trsl. James Haden, The Library of Liberal Arts, Bobbs-Merrill, 1965. Referred to as IJ.

The Metaphysical Foundations of Natural Science, trsl. James Ellington, The Library of Liberal Arts, Bobbs-Merrill, 1967. Referred to as M.

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science in general.[2] Indeed, and more strongly, I want to argue that the notion of lawlikeness and systemicity of nature is defined by Kant only through ' reason ', the ' understanding ' securing no more than the possibility of contingent judgments concerning particular matters of fact; judgments which, though *containing* (according to the transcendental argument) concepts like substance, causality, dynamical interaction, do not thereby *ipso facto* create the possibility of the lawlikeness and orderliness of nature. Whilst offering a rationale for a public language concerning ' nature ' (a term construed by Kant as the aggregate of individual things or sequential events) they are insufficient to construct the concept of an ' order of nature ', a term denoting those complex natural processes treated in the theories of science as coherent systems of empirical laws.

This dual approach towards the foundations of science and its accompanying parallelism between understanding and reason, raises certain problems rarely noticed by those who have concentrated on those parts of Kant's work (especially the ' Transcendental Aesthetic ' and ' Analytic ' of K) that deal with the general categorial principles of the understanding (sometimes called ' the general laws of nature ' (P.53)). The omission is due to the hasty assumption that the putative ' demonstration ' of these general laws was for Kant tantamount to supplying a justificational basis for science *simpliciter*. In fact it supplies (as just suggested) no more than a basis for a public language, reporting on suitable occasions the existence of contingent particular and instantial evidence for scientific regularities, whose *lawlike* nature is ' validated ' for Kant only subsequently by ' reason in its hypothetical employment ' (as in the ' Transcendental Dialectic ' and its ' Appendix ', *e.g.*, K.535ff.), or the parallel discussion of the ' power of judgment in its reflecting employment ' (in J and IJ). This ' reason ' provides the methodological framework for fitting explanatory hypotheses meant to explain a group of empirical laws; and it is only by appreciating the rôle of *reason* in providing foundations for science, that the problems posed for it become apparent, and that

[2] ' Natural science in general ' is a broad term, including the Kantian paradigms, Newton's *Principia*, Maupertuis's work on the ' Principle of Least Action ', and Linnaeus' systems of classification. Contrasted with this, M has the narrower aim of securing the conceptual basis of Newtonian science.

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we even notice Kant's attempts to face these problems. Let us see how they arise.

A fundamental part of Kant's transcendental method is to ' validate ' basic concepts by contending that their ' injection ' into a certain situation is required to make that situation possible as an element of phenomenal reality. Thus, at the level of the understanding, the notion of ' phenomenal object ' (or objective situation) is shown to necessitate the addition of the categorial concepts. The understanding is said to proceed ' spontaneously ', so that the feature of ' objectivity ' which Kant seeks to define as ' possible ' is secured by making it ' self-wrought '. Precisely the same procedure is operative at the level of reason; I shall refer to this as ' the autonomy of reason ' constructing spontaneously its manifold of scientific laws as a set of systems or ' empirical unities '. As with the understanding, reason must not ' borrow ' unity from what is presented to it, but instead ' impose it '. The explanation of this procedure in both cases is the same: one can extract only as much with ' apodeictic certainty ' from ' the world ' as is injected into it by the spontaneous procedures of understanding and reason. (*Cf.*, K.22, 70, 156 and P.84 with K.564.)[3]

There is however a difference between the two cases. The categories of the understanding (*e.g.*, causality) are valid only if they apply in the context of a sensory manifold; Kant calls this their ' constitutive employment '. Only in this context is the notion of an ' object ' admissible; only thus can the understanding ' create ', so to speak, its object. For reason, the situation is different. The sensory manifold has already been earmarked for supplying constitutive significance to the employment of the understanding. At the most, reason is employed in the creation of theories; but nothing as such ' corresponds ' to the theoretical frameworks of science; the ' unity ' which such theories ' mirror ', is not ' given ' but—as Kant ceaselessly reiterates—only ' projected ' (*cf.* K.535). Kant marks this by

[3] The celebrated passage on Galileo, Torricelli and Stahl in the Preface to the Second Edition, K.20ff., conflates the two, mixing in for good measure the ' *a priori* ' concerns of M, *i.e.*, Kant's ' explanation ' (with ' apodeictic certainty ') of the basic concepts of Newtonian science. The average reader, unaware of these three levels (the transcendental level, the level of the ' metaphysics of nature ', and the level of nomothetic reason), and of their conflation in this passage, will again be tempted to misconstrue Kant's views altogether.

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saying that theoretical reason is employed, not constitutively, but merely ' regulatively '.[4]

Now here lies the problem. Reason is ' tied down ' less than the understanding. It ' creates ' no objects; it only *postulates* theoretical unities, and such a procedure is more one-sided than was the case for the understanding. There, categories and objective situation held one another in balance; experience validating the categories; and in their turn the categories making experience possible.[5] In the case of ' reason ' however, little more remains than the postulational *demand* for theoretical unity, *i.e.,* systemicity, not balanced by anything ' objective '. This shows that the ' autonomy of reason ' is purchased at a price. Yet Kant strives to preserve this autonomy, for it serves (as I shall explain presently) as a mirror-image of the autonomy or sovereignty of God.

Thus results a tension in Kant's thought. On one side, reason has to act autonomously. On the other, he wants to avoid arbitrariness, so that the activity of reason may borrow from the constitutive foundation of the understanding. We should expect Kant therefore to provide certain ' relations ' between the two fields, albeit sufficiently ' loose ' to guarantee reason its putative autonomy; an expectation in which we are not disappointed.

This then is the Kantian situation. The ' proof ' of the categories (in their constitutive employment) is too ' tight ' to suffice as foundation for empirical science. Reason must therefore supply a set of principles or maxims (not only causation, but also systemicity, simplicity, economy, *etc.*) which when injected into the logic of the situation produces theoretical unity thus fashioning the notion of an ' order of nature '. Finally, Kant must insert ' relations ' closing the gap between understanding and reason; relations loose enough not to endanger the necessary autonomy of reason. In what follows, I shall sketch some of

[4] Similarly, whilst the ' unity of the understanding ' is ' objectively necessary ', the unity of ' reason ' or ' judgment ' possesses only ' subjective necessity '; it bears only on an ' object ' that is ' projected ', not ' given ' (*cf.* IJ.15). Although, as Kant once says, we may " as if it were a lucky chance favouring our design, ... rejoice if we meet with such a systematic unity under merely empirical laws " (J.20); yet here the ' unity ' would still not be recognised but for the expectations generated by reason.

[5] Clearly this argument is valid only granted Kant's transcendental structure of experience, and its logical complement, ' the phenomenon '.

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Kant's arguments as a minimum of evidence for my interpretation. If correct, this will indicate a far more articulated theory of science than Kant is usually credited with. Thus we shall better grasp Kant's general doctrine, whilst relieving it of some of its supposed difficulties.

II

First, a remark about the Kantian vocabulary and its contextual use. We must appreciate the ' thinness ' of the relevant terminology tenuously stretched over the two disparate fields of understanding and reason. Let us note a few confusions. ' Experience ' may refer to experience of single particular states of affairs, but also to that ' systematic experience ', denoted by what is called ' the theoretical corpus of knowledge '. ' Unity of the manifold ' may refer to the manifold of ' perceptions ' or to the quite different manifold of empirical laws, the one ' united ' in a single ' experience ', the other in a comprehensive theory. 'Nature' stands sometimes for the simple aggregate of things and their states, but more frequently for Kant's ' order of nature ' (also ' harmony of nature '; J.21, 23). Correspondingly, when Kant speaks of nature as ' conforming to law ' (pp. 53–4), in one context this means that the notion of object (corresponding to objective ' experience ') includes the categorial principles of the understanding;[6] in another context, that natural processes are governed (at least in principle) by lawlikeness, in the sense of being subject to empirical laws, or (more strongly) to a thoroughgoing determinism of a Newtonian kind. This terminological fluidity has proved a major stumbling block, impeding a critical appreciation of Kant's dichotomous approach in his theory of science. Some instances of this fluidity in the vocabulary will become apparent in the Kantian passages cited below.

Let me now explain Kant's dichotomous approach, with its implied need for an advance from understanding to reason, by reference to the example of the dual conception of lawlikeness just mentioned; *i.e.*, lawlikeness or causality as a transcendental

[6] This aspect of ' lawfulness ', when applied to the ' empirical concept of matter ' (M, Preface), includes also the transcendental aspect of the Newtonian concepts and laws of motion and gravitation. This, as already mentioned, we cannot deal with in this paper, which deals only with the empirical laws of science, or at least, their ' empirical component ', for example the laws of free-fall, gravitation, the behaviour of gases, *etc.*

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ingredient of the notion of experience (and ' appearance ') in general; and lawlikeness as presupposed in the conception of the empirical laws of science. (I shall call the first ' transcendental lawlikeness ', and the second ' empirical lawlikeness '.) The former is required as a part of the structure of the notion of ' phenomenon ', and of ' possible experience ', its logical complement. To formulate the notion of an observation-report, with the attached claim of intersubjective authority, requires—when dealing with merely ' phenomenal ' objective sequences—a concept which contains the thought of a determinate temporal nexus in accordance with a universal rule.[7] Such a concept of rule-like connexion *is* for Kant the concept of causality. Without such a concept, the analysis of the notion of ' phenomenal sequence ' gives only a combination or ' synthesis ' of ' perceptions ' as yet lacking the objectivity of time-determination; of a time which according to Kant's critical analysis ' cannot be perceived ' *together with* the perceptual manifold (*cf.*, K.209, 219). By adding the requisite concept, the understanding ' creates ' the required notion of an objective sequence. It follows at once that the concept of causality *exhausts* its validational strength in providing the notion of a sequence of states of things, as part of ' nature ', in the sense defined previously. Such sequences, so far, are entirely contingent (as mentioned explicitly by Kant at K.159). Whether they are instances of lawlike successions, and thus exhibit empirical lawlikeness, is a separate question.

This last point is important. For the nature of Kant's argument, according to my reading, must lead to the result that not only does the principle of causality not yield any special causal laws, this being something for which we must obviously resort to observation and the processes of induction (as Kant remarks at K.173); but also, less obviously, that the transcendental argument does not even have the force of generating the empirical lawlikeness of nature, regarded as a justificational component of this notion.

Perhaps the limited logical force of the transcendental argument has been overlooked because the mistaken view to which I have just alluded may be confused with another which is quite correct, namely that the concept of causality, as injected by reason into the scientific situation, has the *same meaning* as that

[7] For this, see also my " Causality, Causal Laws and Scientific Theory in the Philosophy of Kant ", *Brit. J. Phil. Sc.*, XVI, 1965, 187–208.

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which the transcendental argument has putatively shown to be *embedded in* the notion of particular experience in general—*i.e.*, at the level of the understanding. But this is another matter, it simply being the case of the *same concept occurring in two different contexts.*

And the contexts *are* different. At the level of the understanding the addition of the concept of causality is made to an individual sequence of perceptions, a sequence which without it would be ' subjective ', in the sense explained; and only with the addition does there result a particular ' objective ' sequence. Here, the causal *nexus* does not appear explicitly in the *form* of the result, *e.g.*, *B* follows *A*. At the level of reason, the causal concept is ' added ' to the uniformly recurring sequence (constant conjunction), resulting in statement of causally explicit form, *e.g.*, *B* is caused, or necessitated, by *A*. At most such statements presuppose the causal concept in the formal sense of being an *application* of the latter. The problem of the ' existence ' of empirical causality, however, and of its proper interpretation, *i.e.*, Hume's problem, still remains. Whereas in the former case, no-one will deny the existence of objectively conceived empirical sequences!

It is therefore important to appreciate the double-functioning of the following locution: " Unless we assumed that the world is subject to causal (or lawlike) necessity in principle, experience would be impossible ". Since ' world ' (or ' nature '), lawlike necessity, and ' experience ' are all expressions operating at both the level of the understanding and of reason, the distinction between these two levels is concealed by the sameness of the phraseology.[8]

III

Now the correctness, or otherwise, of my contention concerning the difference between transcendental and empirical lawlikeness ought to be testable. For we should expect Kant to

[8] The conflation of the two cases as mentioned sometimes even occurs in Kant's own writings, particularly in P (which can therefore be dangerously misleading to those unaware of the dichotomous nature of Kant's thought), reaching a veritable apotheosis at P.64n, the argument about the stone being warmed by the sun. A recent blatant instance occurs in E. W. Schipper, " Kant's answer to Hume's problem ", *Kant Studien*, vol. 53, 1961–62, pp.68–74, which conflates the two senses of ' experience ' mentioned above, p.213.

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have independent arguments supporting the concept of empirical lawlikeness, as well as explicitly stating that the principle of causality exists as an independent principle of *reason.* Such evidence does in fact exist. I will sketch it briefly.

First of all, there is an explicit statement at K.195, implying the distinction between the two kinds of lawlikeness. Here, Kant distinguishes between the observation that " natural laws . . . carry with them an expression of necessity " and the quite different fact, that as empirical statements they are determined by " grounds which are valid *a priori* ". Important here for my later argument is that Kant actually hints at the existence of a loose relation between the two necessities; for he says that the necessitarian character of empirical laws " contains at least the *intimation* [*Vermutung*] of the existence of a transcendental *a priori* ground ". And he adds again that the corresponding *a priori* principles, founded in transcendental fashion, are subsequently ' applied ', to convert empirical uniformities of succession into causal statements. And although he says that the transcendental principles " supply the concept " (here: of causality), it will be clear that this cannot mean that this concept thereby supplies, let alone *validates,* the empirical lawlikeness of the uniformity.

This is supported more explicitly in the introduction to J (sects. iv–v). Empirical uniformities as such are contingent, Kant writes; but *quâ* laws, they must be conceived as having a necessitarian logic.[9] The need so to conceive them arises from the parallel requirement that they should express the ' order of nature ' (J.21). Now the latter, we have already noted, is only a function of ' projective ' scientific theorising. Such theoretical activity Kant conceives as something ' creative ': " reason does not here beg but command " (K.539). This is a reference to the ' regulative ' and ' constructive ' functions of reason; not only would there be no coherence of empirical uniformities without

[9] Here is another parallel: The law of causation of the Second Analogy is synthetic and *a priori;* empirical laws are contingent and necessary. But the two should not be confused. Moreover, *quâ* contingent, such lawlike statements are also synthetic *a posteriori.* And finally, like all synthetic *a posteriori* statements, they are only ' possible ' in virtue of a synthetic *a priori* unity, something which is ' intimated ' (as we have just seen) by the necessitarian aspect of the empirical law. Clearly, the situation is vastly more complicated than the unsuspecting reader of the Introduction to K imagines.

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explanatory hypotheses, but these could not be chosen, or even formulated, without the employment of ' maxims ' like those of simplicity, continuity, parsimony (*cf.*, J.18, 21; K.538; 542ff.), nor without the addition of certain purely theoretical constructs such as ' pure earth, pure water, pure air ', phlogiston, acid and alkali, gravitational force, *etc.* (*cf.* K.534, 539, 545).

It follows that those empirical uniformities are to be regarded as lawlike which form members of constructive theories. The argument, as usual in Kant, moves both ways. The thought of lawlikeness drives us to construct theories; and without the dynamic of reason in its constructive employment, the concept of law would not be defined (J19–20). To think the empirical uniformities as laws entails and in turn presupposes, the systematic activity of reason. This is put explicitly at J.21, where, having explained that laws have to be thought as necessary, Kant goes on:

> Although the understanding can determine nothing *a priori* in respect of such laws (*quâ* [empirical] objects), it must, in order to trace out these empirical laws (*quâ* laws) place at the basis of all reflection upon the latter an *a priori* principle, *viz.*, that a cognisable order of nature is possible in accordance with these laws.[10]

Still more clearly, the necessitarian logic of laws as a function of *reason* is characterised at J.16, where Kant writes:

> These, as empirical, may be contingent from the point of view of *our* understanding, and yet if they are to be called laws (as the concept of nature requires), they must be regarded as necessary in virtue of a principle of reflecting judgment of the unity of the manifold though it be unknown to us.[11]

The relation between systemicity and lawlikeness is even more intimate at IJ.10, where Kant refers to the system resulting from theorification of what otherwise would be a mere concatenation

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[10] The translation has been modified. Kant means of course that it is a function of reflecting judgment (or theoretical reason) to make this assumption on behalf of the understanding. The conflated text is again productive of the basic confusion!

[11] Here, the ' thinness ' of Kant's vocabulary is very evident: ' Nature ' means ' order of nature '; ' unity of the manifold ' refers to the manifold of *laws*, and not to the unity of perceptions discussed in the Transcendental Analytic. On the other hand, the parallelism between the treatments at the level of the understanding and of reason, is quite apparent.

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of empirical uniformities, as " a thoroughgoing lawlike network [*durchgaengig gesetzmaessiger Zusammenhang*], *i.e.*, an empirical unity ".[12] But, Kant continues, this lawlikeness is, with respect to the understanding, purely ' contingent '; no additional knowledge is thereby provided, and we employ it only as an expression of the determination of the theoretical scientist " to search for the general laws covering particular experiences ".[13]

Now *quâ* empirical statements, Kant always insists, laws never have more than a high probability, more than ' conjectural ' force (K.433; *cf.*, K.535, 625); it is therefore clear that he has shifted attention, in respect of necessity, from empirical truth to constructive form. And we may note in passing, that his ' answer to Hume ' involves both the transcendental argument at the level of the understanding and his theory about scientific theorising at the level of reason (or ' judgment '). Though neither amount to an answer, they are novel attempts to provide a rationale for the common lucutions of science.

This completes the first part of our evidence in favour of the Kantian distinction between two forms of lawlikeness. It remains to note some passages where the parallelism is made evident by the express (or at least implicit) acknowledgment of causality as a regulative principle of *reason.* For instance at K.481, Kant speaks of the " regulative principle of reason " according to which " everything in the sensible world has an empirically conditioned existence ". In another place we meet with clear statement of the relevance of the principle of the understanding *for* reason, and the relation between them. The actual wording is here important:

> The principle of the causal connexion of appearances is *required* in order that we may be able to look for and to formulate the natural conditions of natural events, *i.e.*, their causes in the field of appearance. If this principle be admitted, and be not weakened through any exception, the *requirements* of the understanding, which in its empirical employment sees in all happenings nothing but nature, and is

[12] Note again the need to distinguish between ' empirical unity ' and the ' unity of experience ' of the transcendental deduction of the categories.

[13] The similarity of this to views on lawlikeness in the writings of modern philosphers of science (*e.g.*, W. Kneale, R. B. Braithwaite, E. Nagel) is striking, except that Kant emphasises perhaps rather more ' constructive ' and ' regulative ' aspects of scientific theorising.

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> entitled to this, *are completely satisfied* [literally: the understanding has then all it can demand]. (K.471).[14]

Here the contrast is explicit. The understanding, whose domain is ' nature ', presupposes among others the transcendental principle of causality, and this with necessity. On the other hand, at the level of reason this principle is only a ' requirement ', to ' satisfy ' the understanding. Reason must independently seek causal explanations; it as-it-were does the bidding of an understanding which is *defined* as the very ' faculty of rules ' or ' laws ' (*cf.* K.147; 140); yet the mode of operation of reason is altogether autonomous, and its relation to the understanding only an indirect one.

This ' indirectness ' is stated explicitly at K.547:

> Since every principle which prescribes *a priori* to the understanding thoroughgoing unity in its employment, also holds, *although only indirectly,* of the object of experience, the principles of pure reason must also have objective reality in respect of that object . . . but only in order to indicate the procedure whereby the empirical and determinate employment of the understanding can be brought into complete harmony with itself.[15]

But why *should* the principles of the understanding also hold ' although only indirectly ', at the level of reason? This raises Kant's problem, mentioned at the beginning, of reconciling the autonomy of reason with his conviction that reason needs to be related to the understanding. Let us reiterate briefly Kant's motives for demanding ' autonomy ' for reason. One is the need to make the ' unity of experience ', and the parallel concept of ' the order of nature ', self-wrought. Only thus can we make certain that, as Kant once expresses it, " the unity of nature, is not . . . quite foreign and accidental to the nature of things " (K.564). Moreover, and this is a second motive, only such a subjective approach allows Kant to hold that there is an altogether different

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[14] My italics.

[15] Here, ' object of experience ' does not mean the individual object, considered as a separate and contingent entity, but as something at the intersection of a set of empirical laws. In fact, here the whole terminology of the Analytic is used in the context of ' reason '. Again, the phrase, occurring a few lines previously to our passage, ' systematic unity of all employment of the understanding ' is a reference to theorisation with respect to laws; something very different from ' the unity of the understanding ' of the analytic. Second italics mine.

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' point of view ' alongside that of the theoretical science; the view which regards things, not ' as they *are* ' but ' as they *ought* to be ' (K.526), when the causal principle as applied hitherto is not relevant.[16]

There is however a third, and more basic, motive: Kant's search for a rationale of the concept of God. Instead of regarding the systematic unity of empirical laws as generated by the regulative activity of reason, we may imagine it as proceeding from some non-human understanding (J.16), some ' supreme intelligence ' (K.566), a ' creative reason ' (K.551), in which they reside as ' ground ', or ' source ', or ' substratum ', or ' cause ', or ' archetype ' (K.551, 565; 559; 566; 560; 551);[17] although the laws in reality do not, but only *seem* to, proceed from such a ground, which is itself no more than a kind of ' *focus imaginarius* ' (K.533) that " lies quite outside the bounds of possible experience ".

Kant is emphatic that we should not ' hypostatise ' such a God (K.563), give it ' constitutive ' significance, for he wants to preserve for it the function of a methodological necessity. This God, regarded as the ' author of the world ' (K.31, 566), is required by us[18] because the systematic unity of nature is never complete; the processes of theorising are indefinitely extendible; yet we want to proceed ' as if ' they were complete; " as if all the connexion of things in the world had their ground in such a being " (K.556). In other words, this God has methodological driving power (*cf.* also K.533 for the same point).

At the same time, we see that the Kantian insistence on the sovereignty and autonomy of reason mirrors what had been (in the older locution) the sovereignty and autonomy of God. But the price paid is that the domain of the understanding (of human ' knowledge ') is thereby cut off from the field of theoretical reason, as expressed in the celebrated passage of the Preface to the Second Edition (K.29): " I have therefore found it necessary to deny knowledge, in order to make room for faith ".

These, then, are the motives that demand the autonomy of

[16] *Cf.*, the argument of the Third Antinomy, and the passage from K.471, quoted on pp.218, 219, which introduces it.

[17] The profusion of terms reminds us that Kant offers ' analoga ' (K.546) and is not making any existential claims.

[18] Required from the ' theoretical ' point of view. I omit in this paper all consideration of the moral argument for the ' existence ' of God.

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reason. Yet, this move towards autonomy presents Kant with a difficulty: what is the source of this systematic procedure of reason, and of its regulative principles, such as that of causation? Is this more than a mere methodological postulate that science should never cease to seek for explanations, or for theoretical unification? And is this not to separate the logical articulation of reason too much from that of the understanding, whose transcendental structure was necessarily tied down to the need to make possible experience intelligible, thus giving it a far firmer hold on ' objective reality '? Of course, those who have not noticed the Kantian advance from understanding to reason, and who are under the impression that the transcendental arguments forthwith lay the foundations of science, will not be aware of this problem; though in return, Kant's procedure will look just that much more arbitrary.

Now it is my contention that Kant is quite aware of this tension between the claims of the autonomy of reason, and the opposing claim that the structure of reason be linked to that of the understanding; that although the claims of knowledge have been constrained, the existence of a nature (as domain of the understanding) should yet supply us with something which makes the activity of reason less exclusively isolated, and so less arbitrary. It is true that Kant sometimes seems to opt for a solution of the dilemma by asserting that reason does not stand in need of extrinsic supports, exclaiming in rhapsodic fashion that " the law of reason which requires us to seek for this unity of empirical laws, is a necessary law, since without it we should have no reason at all " (K.538). More normally, however, dispersed throughout the various *Critiques* there are passages where Kant makes a transition from the level of the understanding to that of reason; where the *need* is allowed to manifest itself of moving from one to the other.

There are a number of different modes in which this argument from ' need ' expresses itself. I will label them, respectively, the methodological (with which are allied the teleological and theological) argument; the formal (also analogical), and finally, the argument from the ' phenomenal ' nature of the object.

The methodological argument has primarily an heuristic basis. We cannot leave the particular phenomena unrelated; we must understand their ' why ' and ' wherefore '; we cannot stop short of the ' whole show of things '. Even the humble uniformities of

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constant conjunction require reason, as we have seen, so that they may be viewed as laws. More recent views on theory-construction have made this advance to the level of theory even more pressing, with the increasing realisation that the conceptual framework of observation language borrows heavily from theory. Still, that does not make the transition from particular to systematic experience compulsive, and still less for Kant, for whom observation-language and theory-language lead, as yet, relatively independent lives. But at times Kant tries to represent the advance as though it were logically compulsive. In a passage at IJ.14–15 we read:

> Unity of nature in time and space and unity of for us possible experience are one and the same thing, because unity of nature is a concept which comprises as such only the aggregate of mere appearances.

So far, we are dealing with ' experience ', and its logical complement, ' nature ', both the domain of the understanding. Immediately, however, Kant goes on to say that this experience is

> an experience which *must* itself be possible *as a system of empirical laws,* if (as one *must*) one thinks of experience as a system.[19]

Clearly this is a slide from ' experience ', made possible *via* the transcendental unity of apperception under spatio-temporal forms (which yields no more than particular, individual, contingent fact), to a (systematic) experience which is ' possible as a system of empirical laws', by virtue of the activity of theoretical reason.

Such a slide requires additional mediation, for which Kant seeks help from quasi-formal considerations, the ' formal argument '. The most powerful tool here seems to have been analogy, through which understanding holds up a mirror to reason. One interesting text for this occurs at IJ.9–10, where Kant draws specific attention to the parallelism between the concept of possible experience in general, regarded as ' a system according to transcendental laws ', and that of ' particular experience ' which, being something that is ' thoroughly connected ' under these invariable transcendental principles, ' stands also in need of this systematic connexion of empirical laws ', so that the ' aggregate of particular experiences ' may be regarded ' as a system '. Here

[19] My italics.

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evidently there is a suggestion of an analogy between the situation in respect of ' experience in general ' and ' particular experience ' (one the province of the understanding, the other of reason or judgment); *i.e.*, as the transcendental structure is to the understanding, so the regulative structure is to reason—the aim of the analogy being the inference to the methodological structure.

The footnote appended to this paragraph does in fact make explicit mention of the existence of this analogy,[20] Kant remarking that " what the category is to each particular experience, that the idea of the systematic unity of nature (in respect of its particular laws) is to our capacity of judgment ".[21]

Perhaps one more instance of such an analogical argument should be noted, when Kant writes that reason demands

> to view the appearances as systematically connected with one another *according to the analogy* [*nach der Analogie*] of a causal determination (K.568).[22]

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[20] Similarly, K.546 speaks of ' the idea of reason ' as " an analogon of a schema of sensibility ".

[21] IJ.20. ' Particular experience ' *here* unusually designates ' experience in general '. Also, instead of ' systematic ', Kant uses the here equivalent concepts ' purposiveness or adaptiveness '.

Note that the translator has deleted the reference to analogy from Kant's text, putting instead of the sentence above: " The category pertinent to each individual experience is purposiveness or the conformity of natue to our power of judgment (in respect of special laws) . . .". This is not only nonsense, but conceals the suggestion of the existence of analogy for which Kant is here pleading.

[22] My italics. Instead of the italicised words, Kemp Smith has " in accordance with the principle ". It is as though ignorance of the parallelism which I have attempted to bring to light, had affected the ability of these translators to give accurate translations, since they may not have grasped the sense and intentions of Kant's actual text. In Kemp Smith's case the temptation to translate as he does was particularly easy to succumb to, since causality is (in respect of the understanding) a concept, in accordance with the analogy of which the perceptions are combined to yield objective time sequence. This is expressly stated by Kant at K.212; hence the ' Second Analogy ', which is called the " Principle of Succession in Time, in accordance with the Law of Causality " (K.218B). Against this, in the case of K.568, I contend, the mention of analogy is meant to make the point that the principle of causality is here transferred to operate at the level of reason.

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In all these cases, Kant wants to use the transferring power of the relation of analogy to argue that particular experience, in the sense of a fully fashioned systematic body of knowledge, is articulated *naturally and essentially* in a way formally similar to that articulation of ' experience in general ' which the transcendental argument has shown to be *necessary* at the level of the understanding.

This then is the explication of the ' formal arguments ' for the transition from understanding to reason: through analogies, intimations, demands, indirect hints, and suggestions;[23] all ' relations ' that are loose enough to preserve the ' autonomy of reason ', yet sufficiently strong apparently to give substance to Kant's attempt to inject some of the ' constitutive ' force of the formal situation from the understanding. The attempt is forced upon Kant, just because the transcendental proof of the general principles is too ' tight ', and unable by itself to lead to the methodological practice of science.

Lastly, there is the argument from Kant's phenomenalism in respect of the concept of the object. It is true, so Kant frequently says, that in the interests of securing the basis of empirical ' knowledge ', we must regard the object as phenomenon, as the representation of a ' mere appearance '; yet this makes us ' think ' of the object as having its ground in noumenal reality (*cf.*, K.A269–70; 481–82). Naturally, according to Kant it makes no sense that such a ground ' exists '; there is a mere ' necessity ' to ' think ' in this way—we need not discuss the basis or defensibility of this doctrine. But of interest here is the relevance of all this to the results of Kant's teleological and theological arguments in K and J, whose object had been to supply some intelligible meaning for the notion of a ground or substratum,

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[23] The last-named case occurs at J.233, where Kant writes that the regulative maxim of mechanism in the study of biological phenomena is ' suggested ' [' *an die Hand giebt* '] by the ' mere understanding ', *i.e.*, by the transcendental principles.

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regarded as the ' as if ' source of the systematic connection of natural forms, *i.e.*, the unity of empirical particular laws. In a passage at J.33, Kant contends that whilst the supersensible substrate of the phenomenon, at the level of the understanding, is quite ' *undetermined* ', it is at least ' *determinable* ' at the level of theoretical reason (or judgment), ' by means of the intellectual faculty ', *i.e.*, the regulative methodological processes of reason, something which—as we have seen—involves the notion of the divine *focus imaginarius*.[24]

This supplies a last hint concerning Kant's reasons for believing in the possibility of a progress from understanding to reason. The concept of the understanding, *quâ* phenomenon, is incomplete; though as such alone it can be ' known '. Yet that which would complete it (the *noumenon*), is quite *indeterminate*, and in order at least to make it *determinable, i.e.*, intelligible,[25] an advance towards the field of reason must be undertaken. In this way, whilst from one point of view the understanding is cut off from reason, from another, though in a highly speculative fashion, it requires to advance towards, and to be linked with, the latter.

It will thus be seen that considerable interest attaches to Kant's ' architectonic ', which—in my view—must first be grasped before we proceed to the details of the system. Through the study of this architectonic we moreover learn a great deal about the background to Kant's conception of causality, God, and nature. But we learn even more about a much neglected side of Kant's mode of arguing, *viz.*, the way in which the architectonic itself is employed to insinuate certain conclusions; a

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[24] Kant completes the transitional process, by adding that only the moral argument to God first ' *determines* ' the substratum completely. In the present paper, this aspect has to be ignored.

[25] That the teleological argument yields cognitive grasp and intelligibility (' *Erkenntnis* ') of the notion of the divine substratum (though not of course any ' knowledge ', let alone assurance of its ' objective reality ') is expressly declared at J.307.

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point often asserted by commentators but seldom applied to any constructive purpose. Evidently, a considerable part of the result depends upon plausibilities, hints, intimations and analogies. Now I think I could show that this is a very general feature of many of the important writings in classical philosophy. So that this small case-study may also be regarded as pointing a moral.

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